CHAPTER 44. EVALUATE A PART 121/135.411(a)(2) OPERATOR AIRCRAFT STORAGE PROGRAM

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES AND AIR TRANSPORTATION OVERSIGHT SYSTEM (ATOS) REPORTING ELEMENT.

A. Maintenance: 3341, 3342 (*as applicable*)

B. Avionics: 5341, 5342 (*as applicable*)

C. ATOS Reporting. All Data Collection Tool (DCT) elements are to be documented in accordance with appendix 6 of Federal Aviation Administration (FAA) Order 8400.10, Air Transportation Operations Inspector's Handbook.

D. Non-ATOS Certificate Holder Reporting. All activities are to be documented in accordance with the PTRS procedures manual (PPM).

2. OBJECTIVE. This chapter provides information and guidance to evaluate aircraft storage programs used by air carriers operating under Title 14 of the Code of Federal Regulations (14 CFR) parts 121 and 135 for acceptance.

3. BACKGROUND. The primary purpose of an aircraft storage program is preservation. Storage programs are intended to preserve the aircraft in a known state through methods, techniques, and procedures designed to mitigate or eliminate the adverse effects of the storage environment and nonoperation of the aircraft. An effective storage program will allow the operator to readily return the stored aircraft to an operational status.

4. DEFINITIONS. For the purposes of this handbook chapter, the following definitions apply.

A. Storage (General). An air carrier's aircraft is considered stored when it is removed from active operational status for any reason while the aircraft remains on the certificate holder's operations specifications (OpSpecs). The level of preservation depends on the length of storage, the aircraft design features, and the storage environment (inside/outside, etc.).

B. Short-Term Storage. An aircraft is subject to short-term preservation procedures when it is removed from operational status for less than 60 days.

C. Intermediate-Term Storage. An aircraft is subject to intermediate-term preservation procedures when it is removed from operational status for more than 60 days but less than 120 days.

D. Long-Term Storage. An aircraft is subject to long-term preservation procedures when it is removed from operational status for 120 days or more.

5. GENERAL.

A. Occasionally, and for a variety of reasons, an air carrier will take an aircraft out of service for a period of time. Depending on the circumstances, the time period can be a couple of days to a number of years to indefinitely.

B. The level of preservation depends on variables such as the planned length of storage and the storage environment. For example, a large transport category aircraft taken out of service due to excess capacity and stored for an indefinite period outside on the ramp at San Francisco International Airport should have a more comprehensive level of preservation than an identical aircraft taken out of service for storage and placed in a desert climate like Roswell, NM.

6. AIR CARRIER AIRCRAFT STORAGE PROGRAMS. As stated earlier, aircraft storage programs are intended to mitigate or eliminate the effects of a nonoperational status by implementing various levels of preservation.

A. Consistent with 14 CFR part 1, preservation is included in the scope of the maintenance function along with inspection, repair, overhaul, and the replacement of parts.

B. Aircraft storage programs are an integral part of the air carrier maintenance programs required by part 121, § 121.367 and part 135, § 135.425. Storage programs are developed and documented consistent

with 14 CFR part 43, § 43.13(c) in the manual as required by part 121, §§ 121.135, 121.369, and § 135.425. Air carrier aircraft storage programs do not require any specific FAA approvals other than the § 43.13(c) process.

C. Each air carrier should have a storage program that is unique to its type of aircraft make/model/series, storage environment, and operational needs. Inspectors should not expect a storage program to be exactly the same from one carrier to the next.

D. Generally, aircraft storage programs will have procedures for placing the aircraft in various levels of preservation, for de-preserving the aircraft when placing it back in service, for accomplishing inspections or other maintenance designed to mitigate or eliminate the effects of preservation, and de-preservation, and for documenting all of these actions.

E. Some aircraft manufacturers have recommended storage programs currently in place. These programs are not to be considered mandatory for air carriers to implement. Air carriers may use all, some, or none of these recommendations while developing their own specific storage program. However, it is important to note that some manufacturers may have specific airworthiness requirements based on proper storage/preservation and that the carrier must address these requirements when returning the aircraft to an airworthy condition.

7. AIRCRAFT OPSPECS LISTING. Air carrier aircraft that are removed from service and preserved in accordance with the air carrier's storage program should remain on the aircraft OpSpecs listing. If the aircraft is removed from OpSpecs, the air carrier loses the authority to perform maintenance on that aircraft as well as the authority to use its storage program. Air carrier aircraft removed from the aircraft listing come under the requirements of § 43.13(a) and (b), rather than the air carrier maintenance program. Furthermore, the air carrier's principal maintenance inspector (PMI) loses the oversight responsibility/authority for those aircraft that are not on the air carrier's aircraft listing. However, if the air carrier places an aircraft in a non-operational status but doesn't preserve it to an appropriate level in accordance with a storage program, then the PMI should remove that aircraft from the aircraft OpSpecs listing. The PMI can take this action under the provisions of 14 CFR part 119, § 119.51(a)(1) due to the safety concerns of creating an unknown airworthiness status by not preserving the aircraft. The public interest is served by not allowing the aircraft to be used in air transportation until the operator demonstrates the required airworthiness status to the FAA.

8. STORED AIR CARRIER AIRCRAFT SCHEDULED MAINTENANCE REQUIREMENTS.

A. OpSpec D072, Aircraft Maintenance—Continuous Airworthiness Maintenance Program (CAMP) Authorization, gives the air carrier the authorization to conduct operations under part 121 as long as the requirements set forth in the OpSpec are complied with. It is important to understand that these OpSpec authorization requirements are for operational aircraft. Aircraft placed in storage, with or without a storage program, are not intended for operation; therefore, they do not fall under the requirements of the OpSpec until the carrier intends to operate the aircraft.

B. Since air carrier aircraft that have been placed in a non-operational status and preserved are not being operated, they are not required to be maintained in accordance with the maintenance schedule listed on OpSpec D088, Maintenance Time Limitations Authorization, or OpSpec D089, Maintenance Time Limitations Section.

C. However, the storage program may include other scheduled maintenance requirements or other required actions that are particular to the storage environment and to the level of storage. For example, engine runs may be required on a weekly basis for engines that have not been preserved. Another example is servicing dehumidifying equipment/ material on a scheduled basis. Still another example is moving the aircraft from one side of the ramp to the other and turning it 180 degrees every 3 months. In any case, in addition to the procedures implemented to preserve the aircraft and place it in storage, the storage program should contain a schedule for accomplishment of all tasks required to maintain the aircraft in the intended level of preservation.

9. STORED AIR CARRIER AIRCRAFT AIRWORTHINESS CERTIFICATES. Depending on the level of preservation, intended length of storage, and the security of the aircraft, the air carrier should consider removing the standard airworthiness certificate and the certificate of registration from each stored aircraft for safekeeping.

A. Inspectors must consider a number of factors when evaluating an FAA standard airworthiness certificate issued to a stored aircraft. One is the unlimited or indefinite expiration date. Two others are validity and effectiveness. Valid means that the standard airworthiness certificate has been executed with the proper legal authority and formalities; it is legitimate. Effectiveness means that the certificate remains in force; it has legal meaning. Still another factor to consider is that the effectiveness of the standard airworthiness certificate is derived from the terms and conditions listed in block 6 on the standard airworthiness certificate itself and further described in 14 CFR part 21, § 21.181(a)(1).

B. The text in block 6 of the standard airworthiness certificate states:

> "Unless sooner surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator, this airworthiness certificate is effective as long as the maintenance, preventive maintenance, and alterations are performed in accordance with parts 21, 43, and 91 of the Federal Aviation Regulations, as appropriate, and the aircraft is registered in the United States."

C. It is implicit in the terms and conditions of block 6 that the subject aircraft is being or will be operated. However, when an aircraft is preserved and placed in storage, it is similarly implicit that the aircraft is not going to be operated. However, because there is no expiration date, the standard airworthiness certificate of a preserved and stored aircraft is not to be considered revoked, suspended, or terminated as a result. The standard airworthiness certificate remains valid and the block 6 terms and conditions still apply. The standard airworthiness certificate becomes ineffective when the requirements for maintenance, preventive maintenance, and alterations pursuant to 14 CFR parts 21, 43, and 91 are not complied with.

D. In accordance with the terms and conditions in block 6, the standard airworthiness certificate of a preserved and stored aircraft is restored to a state of being effective when all maintenance, preventive maintenance and alterations required by the air carrier maintenance program are complied with. The air carrier storage program should have clear procedures for ensuring that all of the maintenance program requirements as well as the appropriate regulatory requirements are complied with before approving it for return to service.

10. UTILIZATION OF PARTS FROM AIRCRAFT IN STORAGE. It is common practice for air carriers to remove parts from aircraft that are in storage (regardless if the aircraft is on D085 or not). ASIs must remember that the FAA has no regulatory authority to dictate where carriers obtain their parts. The responsibility lies with the carrier/installer to determine that all parts used on type-certificated products are acceptable for installation. The major concern is maintenance requirements becoming "overdue" on parts that have been installed on aircraft while in storage. The air carriers receiving inspection process must detail the procedures to ensure this responsibility.

11. AIRCRAFT MOVEMENT WHILE IN STORAGE STATUS. Movement (operation) of a stored aircraft from one place to another by air with the intention of keeping it in storage should be an unusual event. However, before any operation of an air carrier aircraft that has been preserved and stored in accordance with the air carrier's storage program can take place, the air carrier must complete procedures for depreserving the aircraft and accomplish those maintenance actions necessary to return the aircraft to an airworthy status. The storage program should clearly outline these procedures and maintenance actions.

A. If the aircraft is not being moved to accomplish maintenance, movement of a preserved and stored aircraft can become complex if Airworthiness Directive (AD) requirements and scheduled maintenance requirements are past due. PMIs should pay close attention to the special flight permit restrictions and requirements of any overdue AD, as well as the terms and conditions of the air carrier's continuing authorization to issue special flight permits for maintenance, if appropriate.

B. The procedures and actions required for operating a preserved and stored aircraft from one storage place to another should not be significantly different from those for returning the aircraft to a full operational status.

C. Aircraft subject to Stage 2 noise restrictions must be flown subject to the additional requirements of 14 CFR part 91, § 91.858.

D. If the aircraft is on the air carrier's OpSpecs then the PMI of the air carrier will provide oversight of the movement of the aircraft. If the aircraft is not on an air carrier certificate then the PMI in the geographical area the aircraft is located will provide oversight.

12. RETURN TO SERVICE FOLLOWING STORAGE. Storage programs are meant to preserve an aircraft, not require the accomplishment of normal scheduled maintenance. At a minimum, certificate holders must ensure the aircraft conforms to applicable airworthiness requirements and limitations of their maintenance program and the regulations. It must be understood that all time, especially calendar time, accrued while in storage must be counted when determining what scheduled maintenance is due once the aircraft is returned to service.

13. OPSPEC D106, AIRCRAFT IN LONG-TERM MAINTENANCE OR STORAGE. The statutory and regulatory basis requiring liability insurance coverage is in Title 49 of the United States Code (49 U.S.C.) 41112 and its implementing regulation, and 14 CFR part 205, § 205.4(b). Section 205.4(b) states, in part, that "Aircraft shall not be listed in the carrier's operations specifications with the FAA and shall not be operated unless liability insurance coverage is in force." All air carrier certificate holders are required to have continuous, effective liability insurance coverage and in effect to ensure that the public is protected in the event of an accident. Effective liability insurance coverage is a condition for an air carrier to hold Office of the Secretary of Transportation (OST) economic authority.

A. However, in some circumstances, maintaining liability insurance coverage on an aircraft not in operation can produce economic hardship for an air carrier certificate holder (e.g., when an air carrier certificate holder's operation is seasonal, an aircraft is undergoing long-term maintenance, or it is in long-term storage). Therefore, to comply with the requirements of § 205.4(b) and accommodate the economic needs of the certificate holders, OpSpec A501, Liability Insurance Suspension for Seasonal Operations, and OpSpec D106, Aircraft in Long-Term Maintenance or Storage, were developed.

B. OpSpec A501 is issued to an air carrier certificate holder who requests to completely cease all kinds of operations for all of its aircraft for a designated period of time. The issuance of OpSpec A501 voluntarily holds all of the air carrier certificate holder's OpSpecs, with the exception of OpSpec A501, in a state of suspension for the established period of time, as listed in OpSpec A501.

C. OpSpec D106 is issued to those air carrier certificate holders who wish to suspend the aircraft liability insurance on specific aircraft that are in long-term maintenance or storage and for which it is not necessary or practicable to meet the requirements of § 205.4(b). These aircraft cannot be used in any air carrier certificate holder's operations during this time. The issuance of this OpSpec voluntarily holds Parts A, B, C, and H of the OpSpecs in suspense for only those aircraft listed in Table 1 of OpSpec D106. Part D maintenance paragraphs are not suspended, which allows the maintenance programs to remain active.

D. At no time will OpSpecs A501 and D106 be active at the same time. These OpSpecs were developed as separate provisions for specific needs.

E. This section only applies to air carriers that have implemented storage programs. Carriers who do not choose to implement storage programs do not need provisions to keep their Part D maintenance paragraphs active, as they will not be maintaining their aircraft in accordance with their maintenance program.

SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of 14 CFR parts 21, 91, 119, 121, and 135
- Successful completion of the Airworthiness Inspector Indoctrination course(s) or equivalent

B. Coordination. This task requires coordination with Airworthiness and Operations aviation safety inspectors (ASI).

2. REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- Parts 21, 119, 121, and 135
- Order 8300.10, Volume 2, Chapter 64, Evaluate Continuous Airworthiness Maintenance Program/Revision, and Vol. 2, Ch. 69, Evaluate Part 121/135 (10 or More) Outsource Maintenance Arrangement, if applicable

B. Forms. None.

C. Job Aids:

- Job Task Analysis (JTA): 3.3.83

3. PROCEDURES.

A. Review the Manual. The certificate holder's manual or other document should define adequate procedures to preserve aircraft while in storage. The areas of preservation in the paragraphs below will prevent the deterioration of the airplane, engines, structure, finish, and/or system components. Certificate holders may have all of these, some of these, or even additional areas in their manual based on the complexity of their aircraft and the amount of time it will be in storage. Certificate holders must consider the location where the aircraft will be stored; i.e., inside and protected from the environment, or outside, in which case environmental conditions must be considered (e.g., high winds, humidity, unusual pollutants, etc.). The need for repetitive inspections to ensure preservation methods are adequate must also be considered. The areas of preservation may include the following:

(1) Airframe. This may include:

- Installation of protective coverings and closing of all external openings (except drains)
- Parking/mooring procedures
- Installation of safety pins
- Washing of aircraft (due to environment, may be repetitive)
- Landing gear strut servicing, lubricating and protection of the oleo
- Tire inflation and rotation
- Fuel system decontamination
- Gust locks
- Primary and secondary flight control cycling and lubrication
- Protection of windows
- Procedures for the removal of parts or components
- Inspection of seats and carpet for moisture/mildew (if stored in humid environments)
- Preserving lavatories and water systems
- Opening of closets, cabinets, and interior doors to supply ventilation and to prevent mildew

(2) Engine/Auxiliary Power Unit (APU). This may include:

- Procedures to operate the engine/APU on an established interval
- Complete preservation of the engine/APU (e.g., pickling)

- Procedures for the removal of parts or components

(3) Electrical. This may include:

- Opening/closing of circuit breakers
- Battery servicing/disconnection
- Removal of batteries from emergency devices such as megaphone, flashlights, power supplies for emergency lights, emergency beacons, etc.
- Procedures for the removal of parts or components

(4) Operational Checks. This may include:

- Procedures to transition the aircraft from preservation to a state acceptable for engine operations and operational checks of systems, back to the preserved state
- Operational checks of hydraulics, electrical, engine, fuel systems and avionics, etc.

B. Review Contracts with Outsource Maintenance Providers. An outsource maintenance provider may be used to store and preserve aircraft. These providers are required to perform all functions in accordance with the certificate holder's manual and be monitored by the operator's Continuing Analysis and Surveillance System (CASS). If contracts were negotiated, the PMI should review this document to ensure the certificate holder's manual procedures will be followed (see vol. 2, ch. 69).

C. Review Procedures for Movement of the Aircraft in a Storage Status. Occasionally, certificate holders may need to fly an aircraft that is in storage to another location to perform maintenance. The air carrier must have procedures in place to ensure an aircraft, which does not meet its type certificate, is in safe condition for the intended flight. The manual must include procedures to:

(1) Ensure that flights conducted under this provision are conducted in accordance with OpSpec D084, Special Flight Permit with Continuous Authorization to Conduct Ferry Flights, and/or OpSpec D095, Minimum Equipment List (MEL) Authorization.

NOTE: The subject aircraft must be listed on D085 in order to be operated as authorized in D084 and D095. If the aircraft is not listed on D085 then the requirements of 14 CFR part 21, § 21.197(a) apply.

(2) Depreserve the aircraft based on any preservation methods used during storage (i.e., protective coverings/standard airworthiness certificates, engine pickling, fuel system additives).

(3) Conduct inspections or operational checks necessary to ensure the aircraft is safe for the intended flight.

(4) Ensure that the aircraft is evaluated for inoperative systems or removed components/ accessories and their affect on the intended flight. This includes determining weight and balance changes on the aircraft.

(5) Obtain approval from personnel with authority and responsibility for authorizing the movement of aircraft in storage status.

(6) Determine that ADs, which must be complied with before flight, are so complied with.

D. Review Procedures for Returning the Aircraft to an Airworthy Condition. Regardless of what procedures a certificate holder has in its manual on preserving an aircraft in storage, the manual must have procedures on how to return an aircraft to airworthy condition once taken out of storage. These procedures must include a records check and compliance audit of the maintenance program. All time limited (flight hours, cycles, or calendar) items that went overdue during the storage period must be brought back into compliance. Review the manual to determine if it includes procedures to:

(1) Define lines of responsibility and authority for personnel involved in ensuring the aircraft is returned to service properly.

(2) Audit the current status of the aircraft to the maintenance program and comply with required tasks, including ADs, life-limited components, certification maintenance requirements, avionics databases, etc.

(3) Depreserve the aircraft based on any preservation methods used during storage (i.e., protective coverings/standard airworthiness

certificates, engine pickling, and fuel system additives).

(4) Conduct other inspections and operational checks, as deemed necessary, based on the amount of time the aircraft was in storage and the environment to which it was exposed.

(5) Conduct any operational check flights or test flights prior to return to service.

4. TASK OUTCOMES.

A. Complete PTRS Data Sheet and/or ATOS DCT SAI: 1.1.1.

B. Complete the Task. Successful completion of this task will result in the acceptance of the storage program submitted as part of the CAMP. If requested by the air carrier, issue OpSpec D106.

C. Document Task. File all supporting paperwork in the operator/applicant's office file.

5. FUTURE ACTIVITIES. Normal surveillance.

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